MONTHLY NOTICES

OF THE

ROYAL ASTRONOMICAL SOCIETY

CONTAINING

PAPERS PUBLISHED IN THE PERIOD 1978 APRIL TO JUNE

VOL. 183

EDITORIAL BOARD

DR D. H. P. JONES, ROYAL GREENWICH OBSERVATORY
DR C. JORDAN, DEPARTMENT OF THEORETICAL PHYSICS, OXFORD
DR M. S. LONGAIR, CAVENDISH LABORATORY, CAMBRIDGE
PROFESSOR B. E. J. PAGEL, ROYAL GREENWICH OBSERVATORY
DR J. R. SHAKESHAFT, MULLARD RADIO ASTRONOMY OBSERVATORY, CAMBRIDGE
PROFESSOR R. J. TAYLER, UNIVERSITY OF SUSSEX ASTRONOMY CENTRE

Published for the Royal Astronomical Society by Blackwell Scientific Publications Oxford London Edinburgh Melbourne

ABLES J.G.	
see MCCULLOCH P.M.	
BAILEY J.A., JONES D.H.P., PARKES G.E., MASON K.O.	
Photometry and polarimetry of AM Herculis	73P
BARLOW MICHAEL J. The destruction and growth of dust	
grains in interstellar space - I. Destruction by sputtering	367
BARLOW MICHAEL J. The destruction and growth of dust	
grains in interstellar space - II. Destruction by grain	
grains in intersterial space in bestraction by grain	
surface reactions, grain-grain collisions and	207
photodesorption	391
BARLOW MICHAEL J. The destruction and growth of dust	
grains in interstellar space - III. Surface recombination,	
heavy element depletion and mantle growth	417
BARNES THOMAS G., EVANS DAVID S., MOFFETT THOMAS J.	
Stellar angular diameters and visual surface brightness -	
III. An improved definition of the relationship	285
BARRETT ALAN H.	
see HO PAUL T.P.	
BATH G.T., SHAVIV G. The space density, recurrence rate	
bain G.I., Shaviv G. The space density, recurrence rate	515
and classification of novae	212
BECKLIN E.E.	
see WYNN-WILLIAMS C.G.	
BEDDOES D.R.	
see MORGAN B.L.	
BENFORD G. Current-carrying beams in astrophysics: models	
for double radio sources and jets	29
BERNAT A.P., LAMBERT D.L. Mg II h and k emission from	
luminous M stars	17P
BINNEY JAMES On the rotation of elliptical galaxies	501
BINNEY JAMES Twisted and warped disks as consequences of	50.
heavy halos	779
BLAKE G.M. Some evidence supporting the cosmological	113
evolution of flat-spectrum quasars	210
BOLTON J.G.	21P
see SAVAGE ANN	
BOWYER STUART	
see CHARLES PHILIP	
BROMAGE G.E., COWAN R.D., FAWCETT B.C. Atomic structure	
calculations involving optimization of radial integrals:	
energy levels and oscillator strengths for Fe XII and Fe	
XIII 3p-3d and 3s-3p transitions	19
BUCKLEY R. Pulsar magnetospheres with parallel electric	
fields - I	771
BURTON W.M., EVANS R.G., PATCHETT BRUCE, WU CHI-CHAO New	111
observations of ultraviolet variability in Wolf-Rayet stars	(05
BUTLER P.W.	003
see MCGEE R.X.	
CARPENTER G.G.	
see WHITE N.E.	
CAVALLO G., REES M.J. A qualitative study of cosmic	
fireballs and Y-ray bursts	359
CHARLES P.A., MASON K.O., WHITE N.E., CULHANE J.L., SANFORD	
P.W., MOFFAT A.F.J. X-ray and optical observations of 3U	
0900-40 (Vela X-1)	813
CHARLES PHILIP, THORSTENSEN JOHN, BOWYER STUART An	0.5
optical candidate for 2A 0042+323 (= 3U 0042+32)	2 Q P

CLARK DAVID H. see MURDIN PAUL COUSINS A.W.J. see DEAN J.F. COWAN R.D.	
see BROMAGE G.E. COX GRAHAM G., PARKER E.A. Time variations of the 22-GHz H ₂ O maser emission spectrum of the star S Persei CULHANE J.L. see CHARLES P.A.	111
CULHANE J.L. see MURDIN PAUL	
DAINTY J.C. Computer simulations of speckle interferometry of binary stars in the photon-counting mode. DAINTY J.C. see MORGAN B.L.	223
DAVISON P.J.N. The structure of the Virgo cluster X-ray	0.00
DEAN J.F., WARREN P.R., COUSINS A.W.J. Reddenings of Cepheids using BVI photometry	39P 569
DENOYER L.K. Observations of negative velocity hydrogen	30)
in IC 443 DOPITA M.A.	187
see FOSBURY R.A.E. DULEY W.W.	
see MILLAR T.J.	
DWORETSKY M.M.	
see GIDDINGS J.R. ELLIS RICHARD, PHILLIPS STEVEN A catalogue of absorption	
lines in QSO spectra	271
ELVIS MARTIN, MACCACARO TOMMASO, WILSON A.S., WARD M.J., PENSTON M.V., FOSBURY R.A.E., PEROLA G.C. Seyfert	
galaxies as X-ray sources EVANS A.B. Correlation of Newtonian and relativistic	129
cosmologies	727
EVANS DAVID S. see BARNES THOMAS G.	
EVANS R.G.	
see BURTON W.M. FAIRALL ANTHONY P. Redshift controversy in the Virgo	
cluster - a suggestion from Centaurus	59P
FAWCETT B.C.	
see BROMAGE G.E.	
FOSBURY R.A.E. see ELVIS MARTIN	
FOSBURY R.A.E.	
COO PENSTON M V.	
FOSBURY R.A.E., MEBOLD U., GOSS W.M., DOPITA M.A. The active elliptical galaxy NGC 1052	549
GARDNER F.F.	
see WHITEOAK J.B. Observations of the J=1-0 transition of CS at 49 GHz in southern molecular clouds	711
CIDDINGS I.R. DWORETSKY M.M. UV 1/58+36, a not	0.00
auhluminaua R etar	265
GISLER GALEN R. Clusters of galaxies and the statistics of emission-line galaxies	633
GLASS I.S. Variations of Circinus X-1 in the infrared	

	OFD
GLASS I.S. NGC 5506: an almost Seyfert galaxy	851
GOSS W.M.	
see LOBERT W.	
GOSS W.M.	
see FOSBURY R.A.E.	
GOSS W.M.	
see LONGMORE A.J.	
GRAHAM ERIC, MOORE DANIEL R. The onset of compressible	
convection	617
GUINDON B. Galaxy counts in the regions surrounding	51
head-tail radio sources	195
GUNN J.E.	
see LAING R.A.	
HAMILTON P.A.	
see MCCULLOCH P.M.	
HAWARDEN T.G.	
see LONGMORE A.J.	
HILDITCH R.W.	
see KILKENNY D.	
HO PAUL T.P., BARRETT ALAN H. First detection of a	
non-metastable ammonia line in absorption	93P
JACKSON E.ATLEE Responses to perturbations of the	
force-free aligned pulsar atmosphere	
JOHN T.J., WILLIAMS R.J. Si- opacity	257
JONES BERNARD J.T., STEIGMAN GARY Distortions of the	
cosmic radiation spectrum in baryon-symmetric cosmologies	585
JONES D.H.P.	
see BAILEY J.A.	
JONES J. On the period of the Geminid meteor stream	539
JOSHI S.C., RAUTELA B.S. Absolute energy distribution in	
Rho Cassiopeiae	
KATZ J. On the number of unstable modes of an equilibrium.	765
KEMP JAMES C.	
see RUDY RICHARD J.	
KIBBLEWHITE E.J.	
see LAING R.A.	
KILKENNY D., HILDITCH R.W., PENFOLD J.E. LB 3459, a	
short-period eclipsing binary system containing two 0-type	
subdwarfs	523
KOTOV V.A., SEVERNY A.B., TSAP T.T. Observations of	
oscillations of the Sun	61
LAING R.A., LONGAIR M.S., RILEY J.M., KIBBLEWHITE E.J.,	
GUNN J.E. Investigations of the optical fields of 3CR	
radio sources to faint limiting magnitudes - II	547
LAMBERT D.L.	
see BERNAT A.P.	
LAMBERT DAVID L., LUCK R. EARLE The abundances of the	
elements in the solar photosphere - IX: Na to Ca	79
LANG KENNETH R., WILSON ROBERT F. Impact-broadening	
theory confirmed by observations of radiofrequency	
recombination lines in W51	5P
LITTLE L.T., MACDONALD G.H., RILEY P.W., MATHESON D.N.	
Observations of interstellar HC5N and HC7N in dark dust	
clouds	45P
LITTLE L.T., RILEY P.W., MACDONALD G.H., MATHESON D.N.	
Association of cyanodiacetylene emission in Heiles 2 with	
a cloud collision?	805

LLOYD EVANS T. Red variable stars in the Magellanic Clouds - II. The field of NGC 371 in the SMC LLOYD EVANS T. Red variable stars in the Magellanic Clouds - III. Carbon stars in the field of NGC 419 (SMC) LOBERT W., GOSS W.M. Observations of M17 and NGC 2024 at 21 cm	319
LONGAIR M.S.	
see LAING R.A.	
LONGMORE A.J., HAWARDEN T.G., WEBSTER B.L., GOSS W.M., MEBOLD ULRICH Two new dwarf galaxies in the Local Group:	
UKS 1927-177 and UKS 2323-326	97P
LUCK R. EARLE	
see LAMBERT DAVID L.	
MACCACARO TOMMASO	
see ELVIS MARTIN MACDONALD G.H.	
see LITTLE L.T.	
MACDONALD G.H.	
see LITTLE L.T.	
MADORE BARRY F., STOBIE R.S., VAN DEN BERGH S. Further	
observations of the double-mode Cepheid V367 Scuti in the	
open cluster NGC 6649	13
MALLIK SUSHMA G.V.	
see RAO N. KAMESWARA	
MANCHESTER R.N.	
see MCCULLOCH P.M.	
MARTIN BRIAN, WICKRAMASINGHE D.T. A dipole model for	
magnetic white dwarf BPM 25114	533
MASON K.O.	
see CHARLES P.A.	
MASON K.O.	
see BAILEY J.A.	
see BAILEY J.A. MATHESON D.N.	
see BAILEY J.A. MATHESON D.N. see LITTLE L.T.	
see BAILEY J.A. MATHESON D.N.	
see BAILEY J.A. MATHESON D.N. see LITTLE L.T. MATHESON D.N.	
see BAILEY J.A. MATHESON D.N. see LITTLE L.T. MATHESON D.N. see LITTLE L.T. MATTHEWS K. see WYNN-WILLIAMS C.G.	
see BAILEY J.A. MATHESON D.N. see LITTLE L.T. MATHESON D.N. see LITTLE L.T. MATTHEWS K. see WYNN-WILLIAMS C.G. MCCULLOCH P.M., HAMILTON P.A., MANCHESTER R.N., ABLES J.G.	
see BAILEY J.A. MATHESON D.N. see LITTLE L.T. MATHESON D.N. see LITTLE L.T. MATTHEWS K. see WYNN-WILLIAMS C.G. MCCULLOCH P.M., HAMILTON P.A., MANCHESTER R.N., ABLES J.G. Polarisation characteristics of southern pulsars - II. 640	
see BAILEY J.A. MATHESON D.N. see LITTLE L.T. MATHESON D.N. see LITTLE L.T. MATTHEWS K. see WYNN-WILLIAMS C.G. MCCULLOCH P.M., HAMILTON P.A., MANCHESTER R.N., ABLES J.G. Polarisation characteristics of southern pulsars - II. 640 MHz observations	645
see BAILEY J.A. MATHESON D.N. see LITTLE L.T. MATHESON D.N. see LITTLE L.T. MATTHEWS K. see WYNN-WILLIAMS C.G. MCCULLOCH P.M., HAMILTON P.A., MANCHESTER R.N., ABLES J.G. Polarisation characteristics of southern pulsars - II. 640 MHz observations	
see BAILEY J.A. MATHESON D.N. see LITTLE L.T. MATHESON D.N. see LITTLE L.T. MATTHEWS K. see WYNN-WILLIAMS C.G. MCCULLOCH P.M., HAMILTON P.A., MANCHESTER R.N., ABLES J.G. Polarisation characteristics of southern pulsars - II. 640 MHz observations	645 799
see BAILEY J.A. MATHESON D.N. see LITTLE L.T. MATHESON D.N. see LITTLE L.T. MATTHEWS K. see WYNN-WILLIAMS C.G. MCCULLOCH P.M., HAMILTON P.A., MANCHESTER R.N., ABLES J.G. Polarisation characteristics of southern pulsars - II. 640 MHz observations	799
see BAILEY J.A. MATHESON D.N. see LITTLE L.T. MATHESON D.N. see LITTLE L.T. MATTHEWS K. see WYNN-WILLIAMS C.G. MCCULLOCH P.M., HAMILTON P.A., MANCHESTER R.N., ABLES J.G. Polarisation characteristics of southern pulsars - II. 640 MHz observations MCGEE R.X., NEWTON LYNETTE M., BUTLER P.W. Large Magellanic Cloud sources at 3.4-cm wavelength MCVITTIE G.C. Newtonian cosmology with a time-varying constant of gravitation	799
see BAILEY J.A. MATHESON D.N. see LITTLE L.T. MATHESON D.N. see LITTLE L.T. MATTHEWS K. see WYNN-WILLIAMS C.G. MCCULLOCH P.M., HAMILTON P.A., MANCHESTER R.N., ABLES J.G. Polarisation characteristics of southern pulsars - II. 640 MHz observations	799
see BAILEY J.A. MATHESON D.N. see LITTLE L.T. MATHESON D.N. see LITTLE L.T. MATTHEWS K. see WYNN-WILLIAMS C.G. MCCULLOCH P.M., HAMILTON P.A., MANCHESTER R.N., ABLES J.G. Polarisation characteristics of southern pulsars - II. 640 MHz observations MCGEE R.X., NEWTON LYNETTE M., BUTLER P.W. Large Magellanic Cloud sources at 3.4-cm wavelength MCVITTIE G.C. Newtonian cosmology with a time-varying constant of gravitation MEBOLD U. see FOSBURY R.A.E.	799
see BAILEY J.A. MATHESON D.N. see LITTLE L.T. MATHESON D.N. see LITTLE L.T. MATTHEWS K. see WYNN-WILLIAMS C.G. MCCULLOCH P.M., HAMILTON P.A., MANCHESTER R.N., ABLES J.G. Polarisation characteristics of southern pulsars - II. 640 MHz observations MCGEE R.X., NEWTON LYNETTE M., BUTLER P.W. Large Magellanic Cloud sources at 3.4-cm wavelength MCVITTIE G.C. Newtonian cosmology with a time-varying constant of gravitation MEBOLD U. see FOSBURY R.A.E. MEBOLD ULRICH	799
See BAILEY J.A. MATHESON D.N. see LITTLE L.T. MATHESON D.N. see LITTLE L.T. MATTHEWS K. see WYNN-WILLIAMS C.G. MCCULLOCH P.M., HAMILTON P.A., MANCHESTER R.N., ABLES J.G. Polarisation characteristics of southern pulsars - II. 640 MHz observations	799
See BAILEY J.A. MATHESON D.N. See LITTLE L.T. MATHESON D.N. See LITTLE L.T. MATTHEWS K. See WYNN-WILLIAMS C.G. MCCULLOCH P.M., HAMILTON P.A., MANCHESTER R.N., ABLES J.G. Polarisation characteristics of southern pulsars - II. 640 MHz observations	799 749
See BAILEY J.A. MATHESON D.N. see LITTLE L.T. MATHESON D.N. see LITTLE L.T. MATTHEWS K. see WYNN-WILLIAMS C.G. MCCULLOCH P.M., HAMILTON P.A., MANCHESTER R.N., ABLES J.G. Polarisation characteristics of southern pulsars - II. 640 MHz observations	799 749
See BAILEY J.A. MATHESON D.N. See LITTLE L.T. MATHESON D.N. See LITTLE L.T. MATTHEWS K. See WYNN-WILLIAMS C.G. MCCULLOCH P.M., HAMILTON P.A., MANCHESTER R.N., ABLES J.G. Polarisation characteristics of southern pulsars - II. 640 MHz observations	799 749
See BAILEY J.A. MATHESON D.N. see LITTLE L.T. MATHESON D.N. see LITTLE L.T. MATTHEWS K. see WYNN-WILLIAMS C.G. MCCULLOCH P.M., HAMILTON P.A., MANCHESTER R.N., ABLES J.G. Polarisation characteristics of southern pulsars - II. 640 MHz observations	799 749
See BAILEY J.A. MATHESON D.N. See LITTLE L.T. MATHESON D.N. See LITTLE L.T. MATTHEWS K. See WYNN-WILLIAMS C.G. MCCULLOCH P.M., HAMILTON P.A., MANCHESTER R.N., ABLES J.G. Polarisation characteristics of southern pulsars - II. 640 MHz observations	799 749
MATHESON D.N. see LITTLE L.T. MATHESON D.N. see LITTLE L.T. MATTHEWS K. see WYNN-WILLIAMS C.G. MCCULLOCH P.M., HAMILTON P.A., MANCHESTER R.N., ABLES J.G. Polarisation characteristics of southern pulsars - II. 640 MHz observations	799 749
See BAILEY J.A. MATHESON D.N. See LITTLE L.T. MATHESON D.N. See LITTLE L.T. MATTHEWS K. See WYNN-WILLIAMS C.G. MCCULLOCH P.M., HAMILTON P.A., MANCHESTER R.N., ABLES J.G. Polarisation characteristics of southern pulsars - II. 640 MHz observations	799 749

MORGAN B.L., BEDDOES D.R., SCADDAN R.J., DAINTI J.C.	701
Observations of binary stars by speckle interferometry - I.	701
MURDIN PAUL, CLARK DAVID H., CULHANE J.L. Coronal lines	-
in supernova remnant spectra	79P
MURRAY C.A. On the precession and nutation of the Earth's	
axis of figure	677
NANDY K.	
see SMYTH M.J.	
NARLIKAR J.V. Quantum fluctuations in gravitational	
collapse and cosmology	159
NEUGEBAUER G.	
see WYNN-WILLIAMS C.G.	
NEWTON LYNETTE M.	
see MCGEE R.X.	10
PAGEL B.E.J. On the abundance of sulphur in H II regions	11
PARKER E.A.	
see COX GRAHAM G.	
PARKES G.E.	
see BAILEY J.A.	
PATCHETT BRUCE	
see BURTON W.M.	
PENFOLD J.E.	
see KILKENNY D.	
PENSTON M.V.	
see ELVIS MARTIN	
PENSTON M.V., FOSBURY R.A.E. Spectrophotometry of three	
radio galaxies	479
PERCIVAL I.C., RICHARDS D. Cross-sections and rates for	
electron excitation of excited positively-charged hydrogen	
and hydrogenic ions	220
	329
PEROLA G.C.	
see ELVIS MARTIN	
PETERSON B.A.	
see SAVAGE ANN	
PHILLIPS STEVEN	
see ELLIS RICHARD	
PIKE C.D. Intermediate band electronography of globular	
clusters - I. The red giants in M5 (NGC 5904)	101
POOLEY G.G.	
see RILEY J.M.	
PORTER N.A., WEEKES T.C A search for high energy	
gamma-ray bursts from primordial black holes or other	
astronomical objects	205
PRADHAN A.K. Fine-structure transitions by electron	-05
impact in singly-ionized sulphur	SOP
PYE J.P.	091
see WARWICK R.S.	
RAO N. KAMESWARA, MALLIK SUSHMA G.V. Equivalent width of	
0 I)7774 and absolute magnitude relation for F and G	
supergiants	211
RAUTELA B.S.	
see JOSHI S.C.	
REES M.J.	
see WHITE S.D.M.	
REES M.J.	
see CAVALLO G.	
RICHARDS D.	
see PERCIVAL I.C.	

RICKETTS M.J.	
see WATSON M.G.	
RICKETTS M.J. A search for X-ray emission from Abell	
clusters and superclusters	
clusters and superclusters	51P
RILEY J.M., POOLEY G.G. The radio structure of 3C 123 at	
2.7 and 15 GHz	245
RILEY J.M.	
see LAING R.A.	
RILEY P.W.	
see LITTLE L.T.	
RILEY P.W.	
see LITTLE L.T.	
RUDY RICHARD J., KEMP JAMES C. A survey of nine beta	
Cepheid stars for magnetic fields	595
SALEM M., MIDDLETON M.S. Time variability of	
astrophysical masers	491
SANFORD P.W.	
see CHARLES P.A.	
SAVAGE ANN, BOLTON J.G., TRITTON K.P., PETERSON B.A.	
Redshifts for 24 optically selected QSO s	473
S CADDAN R.J.	7/3
see MORGAN B.L.	
SCOTT P.F. High resolution observations of G49.5-0.4 (W51)	1,35
SEVERNY A.B.	433
see KOTOV V.A.	
SHALLIS M.J. A method of determining laboratory/ solar	1
wavelength shifts: application to the C_molecule	1
SHARA M.M., SHAVIV G. Hydrodynamic simulations of	(07
white-dwarf-main-sequence star collisions	68/
SHAVIV G.	
see BATH G.T.	
SHAVIV G.	
see SHARA M.M.	
SMYTH M.J., NANDY K. Infrared photometry of early-type	
stars - I	215
STEIGMAN GARY	
see JONES BERNARD J.T.	
STIFT M.J. The magnetic deformation of CrB	443
STOBLE R.S.	
see MADORE BARRY F.	
SULLIVAN D.J., TRODAHL H.J. Temperature variations in Phe.	201
THORSTENSEN JOHN	
see CHARLES PHILIP	
TRITTON K.P.	
see SAVAGE ANN	
TRODAHL H.J.	
see SULLIVAN D.J.	
TSAP T.T.	
see KOTOV V.A.	
VAN DEN BERGH S.	
see MADORE BARRY F.	
WARD M.J.	
see ELVIS MARTIN	
WARREN P.R.	
DEAN I.F.	
WARWICK R.S. PYE J.P. X-ray source counts at high	1.00
calactic latitude	169

WATSON F.G. The zenithal blind spot of a	277
computer-controlled altazimuthal telescope	211
WATSON M.G., RICKETTS M.J. The periodic behaviour of 2A	0.50
0042+323 (= 3U 0042+32)	35P
WEBSTER B.L.	
see LONGMORE A.J.	
WEEKES T.C	
see PORTER N.A.	
WEISS N.O. Small-scale magnetic fields and convection in	4115
the solar photosphere	63P
WHITE N.E., CARPENTER G.G. The recurrent X-ray transient	
A 0538-66	11P
WHITE N.E.	
see CHARLES P.A.	
WHITE S.D.M., REES M.J. Core condensation in heavy halos:	
a two-stage theory for galaxy formation and clustering	341
WHITEOAK J.B., GARDNER F.F. Observations of the	
interstellar OH 160H abundance ratio	67P
WHITEOAK J.B.	
see GARDNER F.F.	
WICKRAMASINGHE D.T.	
see MARTIN BRIAN	
WILLIAMS P.M. The open cluster Cr 140 revisited	49
WILLIAMS R.J.	
see JOHN T.J.	
WILSON A.S.	
see ELVIS MARTIN	
WILSON ROBERT F.	
see LANG KENNETH R.	
WU CHI-CHAO	
see BURTON W.M.	
WYNN-WILLIAMS C.G., BECKLIN E.E., MATTHEWS K., NEUGEBAUER G.	
Two-micron line emission from the H II region G333.6-0.2.	237
YABUSHITA S. On the effect of gas pressure in the theory	
of line accretion - II	459

SUBJECT INDEX	PAGE
ABUNDANCES OF THE ELEMENTS The abundances of the elements in the solar photosphere - IX: Na to Ca, LAMBERT DAVID L., LUCK R. EARLE. On the abundance of sulphur in H II regions, PAGEL B.E.J Observations of the interstellar OH OH abundance ratio, WHITEOAK J.B., GARDNER F.F.	79 1P 67P
ACCRETION AND ACCRETION DISKS On the effect of gas pressure in the theory of line accretion - II, YABUSHITA S	459
BLACK HOLES A search for high energy gamma-ray bursts from primordial black holes or other astronomical objects, PORTER N.A., WEEKES T.C	205
CELESTIAL MECHANICS On the precession and nutation of the Earth's axis of figure MURRAY C.A	677
COSMOLOGY Quantum fluctuations in gravitational collapse and cosmology NARLIKAR J.V	159
X-ray source counts at high galactic latitude, WARWICK R.S., PYE J.P	169
galaxy formation and clustering, WHITE S.D.M., REES M.J Some evidence supporting the cosmological evolution of flat-spectrum quasars, BLAKE G.M Distortions of the cosmic radiation spectrum in	341 21P
baryon-symmetric cosmologies, JONES BERNARD J.T., STEIGMAN GARY	585 727
Newtonian cosmology with a time-varying constant of gravitation, MCVITTIE G.C	749
DATA REDUCTION Computer simulations of speckle interferometry of binary stars in the photon-counting mode, DAINTY J.C	223
EARTH On the precession and nutation of the Earth's axis of figure MURRAY C.A	677
GALACTIC STRUCTURE AND STELLAR EVOLUTION Twisted and warped disks as consequences of heavy halos, BINNEY JAMES	779
GALAXIES Seyfert galaxies as X-ray sources, ELVIS MARTIN, MACCACARO TOMMASO, WILSON A.S., WARD M.J., PENSTON M.V., FOSBURY	120
R.A.E., PEROLA G.C	

Erratum	275
galaxy formation and clustering, WHITE S.D.M., REES M.J Spectrophotometry of three radio galaxies, PENSTON M.V.,	341
FOSBURY R.A.E	479
On the rotation of elliptical galaxies, BINNEY JAMES	501
Investigations of the optical fields of 3CR radio sources	
to faint limiting magnitudes - II, LAING R.A., LONGAIR M.S.	
RILEY J.M., KIBBLEWHITE E.J., GUNN J.E	547
The active elliptical galaxy NGC 1052, FOSBURY R.A.E.,	
MEBOLD U., GOSS W.M., DOPITA M.A	549
Clusters of galaxies and the statistics of emission-line	
galaxies, GISLER GALEN R	633
Twisted and warped disks as consequences of heavy halos,	770
BINNEY JAMES	779
NGC 5506: an almost Seyfert galaxy, GLASS I.S	85P
Two new dwarf galaxies in the Local Group: UKS 1927-177 and	
UKS 2323-326, LONGMORE A.J., HAWARDEN T.G., WEBSTER B.L.,	07D
GOSS W.M., MEBOLD ULRICH	9/1
GALAXY CLUSTERS	
Galaxy counts in the regions surrounding head-tail radio	
sources, GUINDON B	195
Core condensation in heavy halos: a two-stage theory for	
galaxy formation and clustering, WHITE S.D.M., REES M.J	341
The structure of the Virgo cluster X-ray source, DAVISON	
P.J.N	39P
A search for X-ray emission from Abell clusters and	
superclusters, RICKETTS M.J	51P
Redshift controversy in the Virgo cluster - a suggestion	
from Centaurus, FAIRALL ANTHONY P	59P
Clusters of galaxies and the statistics of emission-line	
galaxies, GISLER GALEN R	633
Two new dwarf galaxies in the Local Group: UKS 1927-177 and	
UKS 2323-326, LONGMORE A.J., HAWARDEN T.G., WEBSTER B.L., GOSS W.M., MEBOLD ULRICH	07D
GOSS W.M., MEDOLD OLKICH	9/1
GAMMA-RAY ASTRONOMY	
A search for high energy gamma-ray bursts from primordial	
black holes or other astronomical objects, PORTER N.A.,	
WEEKES T.C	205
A qualitative study of cosmic fireballs and y-ray bursts,	
CAVALLO G., REES M.J	359
THERAPED AGENOUGE	
INFRARED ASTRONOMY	
<pre>Infrared photometry of early-type stars - I, SMYTH M.J., NANDY K</pre>	215
Two-micron line emission from the H II region G333.6-0.2,	215
WYNN-WILLIAMS C.G., BECKLIN E.E., MATTHEWS K., NEUGEBAUER	
G REUGEDAUER	237
Variations of Circinus X-1 in the infrared, GLASS I.S	335
	- 33
INSTRUMENTS AND TECHNIQUES	
A method of determining laboratory/ solar wavelength	
shifts: application to the C molecule, SHALLIS M.J	1
Computer simulations of speckle interferometry of binary stars in the photon-counting mode. DAINTY I.C.	
Stats in the bhoton-counting mode. DAINTY J.C.	777

The zenithal blind spot of a computer-controlled	
Observations of binary stars by speckle interferometry - I	277
MORGAN B.L., BEDDOES D.R., SCADDAN R.J., DAINTY J.C	70
INTERSTELLAR MEDIUM	
Diatomic oxide interstellar grains, MILLAR T.J., DULEY W.W The destruction and growth of dust grains in interstellar	177
space - I. Destruction by sputtering, BARLOW MICHAEL J The destruction and growth of dust grains in interstellar space - II. Destruction by grain surface reactions, grain-grain collisions and photodesorption, BARLOW MICHAEL J	367
The destruction and growth of dust grains in interstellar space - III. Surface recombination, heavy element	391
depletion and mantle growth, BARLOW MICHAEL J Observations of interstellar HC ₅ N and HC ₇ N in dark dust clouds, LITTLE L.T., MACDONALD G.H., RILEY P.W., MATHESON	417
D.N Observations of the interstellar OH OH abundance ra io, WHITEOAK J.B., GARDNER F.F.	45F
MAGELLANIC CLOUDS	
Red variable stars in the Magellanic Clouds - II. The field	
of NGC 371 in the SMC, LLOYD EVANS T	305
stars in the field of NGC 419 (SMC), LLOYD EVANS T	319
Large Magellanic Cloud sources at 3.4-cm wavelength, MCGEE R.X., NEWTON LYNETTE M., BUTLER P.W	799
METEORS	
On the period of the Geminid meteor stream, JONES J	539
NEBULAE - GASEOUS	
Two-micron line emission from the H II region G333.6-0.2, WYNN-WILLIAMS C.G., BECKLIN E.E., MATTHEWS K., NEUGEBAUER G	237
On the abundance of sulphur in H II regions, PAGEL B.E.J	1P
Impact-broadening theory confirmed by observations of radiofrequency recombination lines in W51, LANG KENNETH R.,	E vo
WILSON ROBERT F	5P 435
Observations of interstellar HC,N and HC,N in dark dust clouds, LITTLE L.T., MACDONALD G.H., RILEY P.W., MATHESON	
D.N.	45E
Observations of the J=1-0 transition of CS at 49 GHz in southern molecular clouds, GARDNER F.F., WHITEOAK J.B	711
Association of cyanodiacetylene emission in Heiles 2 with a cloud collision?, LITTLE L.T., RILEY P.W., MACDONALD G.H., MATHESON D.N	805
First detection of a non-metastable ammonia line in absorption, HO PAUL T.P., BARRETT ALAN H	93E
NEBULAE - GASEOUS	
Observations of M17 and NGC 2024 at 21 cm, LOBERT W., GOSS W.M	119
PHYSICAL PROCESSES	
Current-carrying beams in astrophysics: models for double radio sources and jets, BENFORD G	29

Core condensation in heavy halos: a two-stage theory for galaxy formation and clustering, WHITE S.D.M., REES M.J	341
The destruction and growth of dust grains in interstellar space - I. Destruction by sputtering, BARLOW MICHAEL J The destruction and growth of dust grains in interstellar	367
space - II. Destruction by grain surface reactions, grain-grain collisions and photodesorption, BARLOW MICHAEL J	397
The destruction and growth of dust grains in interstellar space - III. Surface recombination, heavy element	417
depletion and mantle growth, BARLOW MICHAEL J Responses to perturbations of the force-free aligned pulsar	417
atmosphere, JACKSON E.ATLEE	445
On the effect of gas pressure in the theory of line accretion - II, YABUSHITA S	459
Time variability of astrophysical masers, SALEM M., MIDDLETON M.S	491
The onset of compressible convection, GRAHAM ERIC, MOORE	
DANIEL R	617
Hydrodynamic simulations of white-dwarf-main-sequence star collisions, SHARA M.M., SHAVIV G	687
On the number of unstable modes of an equilibrium, KATZ J	765
Pulsar magnetospheres with parallel electric fields - I,	771
BUCKLEY R	771
PULSARS	
Responses to perturbations of the force-free aligned pulsar	
atmosphere, JACKSON E.ATLEE	445
MHz observations, MCCULLOCH P.M., HAMILTON P.A.,	
MANCHESTER R.N., ABLES J.G	645
Pulsar magnetospheres with parallel electric fields - I,	
BUCKLEY R	771
QUASARS	
A catalogue of absorption lines in QSO spectra, ELLIS	
RICHARD, PHILLIPS STEVEN	271
BOLTON J.G., TRITTON K.P., PETERSON B.A	473
Investigations of the optical fields of 3CR radio sources	., 0
to faint limiting magnitudes - II, LAING R.A., LONGAIR M.S.	
RILEY J.M., KIBBLEWHITE E.J., GUNN J.E	547
flat-spectrum quasars, BLAKE G.M	21P
RADIO ASTRONOMY	
Current-carrying beams in astrophysics: models for double	
radio sources and jets, BENFORD G	29
of the star S Persei, COX GRAHAM G., PARKER E.A	111
Observations of M17 and NGC 2024 at 21 cm, LOBERT W., GOSS	
W.M	119
DENOYER L.K	187
Galaxy counts in the regions surrounding head-tail radio sources, GUINDON B	195
The radio structure of 3C 123 at 2.7 and 15 GHz, RILEY J.M.,	173
POOLEY G.G.	245

Impact-broadening theory confirmed by observations of radiofrequency recombination lines in W51, LANG KENNETH R.,	
High resolution observations of G49.5-0.4 (W51) SCOTT P.F.	5P 435
Spectrophotometry of three radio galaxies, PENSTON M.V.,	
FOSBURY R.A.E Investigations of the optical fields of 3CR radio sources to faint limiting magnitudes - II, LAING R.A., LONGAIR M.S.	479
RILEY J.M., KIBBLEWHITE E.J., GUNN J.E	547
D.NObservations of the interstellar OH OH abundance ra io, WHITEOAK J.B., GARDNER F.F.	45F
Polarisation characteristics of southern pulsars - II. 640 MHz observations, MCCULLOCH P.M., HAMILTON P.A., MANCHESTER R.N., ABLES J.G	67F
Observations of the J=1-0 transition of CS at 49 GHz in southern molecular clouds, GARDNER F.F., WHITEOAK J.B	711
Large Magellanic Cloud sources at 3.4-cm wavelength, MCGEE R.X., NEWTON LYNETTE M., BUTLER P.W	799
Association of cyanodiacetylene emission in Heiles 2 with a cloud collision?, LITTLE L.T., RILEY P.W., MACDONALD G.H.,	
MATHESON D.N	805 93F
description, no thou trit, builder man military	731
RELATIVITY	
Quantum fluctuations in gravitational collapse and cosmology NARLIKAR J.V	159
SPECTROSCOPY	
A method of determining laboratory/ solar wavelength shifts: application to the C ₂ molecule, SHALLIS M.J	1
Atomic structure calculations involving optimization of radial integrals: energy levels and oscillator strengths	
for Fe XII and Fe XIII 3p-3d and 3s-3p transitions, BROMAGE G.E., COWAN R.D., FAWCETT B.C	19
Si- opacity, JOHN T.J., WILLIAMS R.J	257
RICHARD, PHILLIPS STEVEN	271
radiofrequency recombination lines in W51, LANG KENNETH R.,	5P
Cross-sections and rates for electron excitation of excited positively-charged hydrogen and hydrogenic ions, PERCIVAL	220
I.C., RICHARDS D Time variability of astrophysical masers, SALEM M.,	
MIDDLETON M.S	771
singly-ionized sulphur, PRADHAN A.K	89I
STARS ,	
Hydrodynamic simulations of white-dwarf-main-sequence star	69
collisions SHARA M.M. SHAVIV G	007

STARS - ANGULAR DIAMETERS OF Stellar angular diameters and visual surface brightness - III. An improved definition of the relationship, BARNES THOMAS G., EVANS DAVID S., MOFFETT THOMAS J	285
STARS - ATMOSPHERES OF Si- opacity, JOHN T.J., WILLIAMS R.J UV 1758+36, a hot subluminous B star, GIDDINGS J.R., DWORETSKY M.M	257 265
STARS - BINARY Computer simulations of speckle interferometry of binary stars in the photon-counting mode, DAINTY J.C LB 3459, a short-period eclipsing binary system containing two O-type subdwarfs, KILKENNY D., HILDITCH R.W., PENFOLD	223
J.E	523 701
JONES D.H.P., PARKES G.E., MASON K.O STARS - CHEMICAL COMPOSITION OF The abundances of the elements in the solar photosphere - IX: Na to Ca, LAMBERT DAVID L., LUCK R. EARLE	73P 79
STARS - CLUSTERS OF The open cluster Cr 140 revisited, WILLIAMS P.M Intermediate band electronography of globular clusters - I. The red giants in M5 (NGC 5904), PIKE C.D	49
STARS - MAGNETIC FIELDS IN The magnetic deformation of CrB, STIFT M.J	443
Small-scale magnetic fields and convection in the solar photosphere, WEISS N.O	63P 595
STARS - PHOTOMETRY OF Absolute energy distribution in Rho Cassiopeiae, JOSHI S.C., RAUTELA B.S	55
Intermediate band electronography of globular clusters - I. The red giants in M5 (NGC 5904), PIKE C.D	101 201
NANDY K Stellar angular diameters and visual surface brightness - III. An improved definition of the relationship, BARNES THOMAS G., EVANS DAVID S., MOFFETT THOMAS J	215
Reddenings of Cepheids using BVI photometry, DEAN J.F., WARREN P.R., COUSINS A.W.J Photometry and polarimetry of AM Herculis, BAILEY J.A., JONES D.H.P., PARKES G.E., MASON K.O	569

STARS - SPECTROSCOPY OF	
Time variations of the 22-GHz H ₂ O maser emission spectrum of the star S Persei, COX GRAHAM C. PARKER F A	111
relation for F and G supergiants, RAO N, KAMESWARA MALLEY	
Mg II h and k emission from luminous M stars, BERNAT A.P	211
LAMBERT D.L	17P
STARS - STRUCTURE AND EVOLUTION OF The onset of compressible convection, GRAHAM ERIC, MOORE	
DANIEL R	617
STARS - VARIABLE	
Further observations of the double-mode Cepheid V367 Scuti in the open cluster NGC 6649, MADORE BARRY F., STOBLE R.S.,	
VAN DEN BERGH S	13 201
of NGC 371 in the SMC, LLOYD EVANS T	305
stars in the field of NGC 419 (SMC), LLOYD EVANS T Variations of Circinus X-1 in the infrared, GLASS I.S	319 335
The space density, recurrence rate and classification of novae, BATH G.T., SHAVIV G	515
WARREN P.R., COUSINS A.W.J	569
RUDY RICHARD J., KEMP JAMES C	595
stars, BURTON W.M., EVANS R.G., PATCHETT BRUCE, WU CHI-CHAO X-ray and optical observations of 3U 0900-40 (Vela X-1), CHARLES P.A., MASON K.O., WHITE N.E., CULHANE J.L.,	605
SANFORD P.W., MOFFAT A.F.J	813
SUN	
	1
Observations of oscillations of the Sun, KOTOV V.A., SEVERNY A.B., TSAP T.T	61
The abundances of the elements in the solar photosphere - IX: Na to Ca, LAMBERT DAVID L., LUCK R. EARLE	79
Small-scale magnetic fields and convection in the solar photosphere, WEISS N.O	
SUPERNOVAE AND SUPERNOVA REMNANTS	
Observations of negative velocity hydrogen in IC 443,	187
Coronal lines in supernova remnant spectra, MURDIN PAUL, CLARK DAVID H., CULHANE J.L	79P
ULTRAVIOLET ASTRONOMY	
UV 1758+36, a hot subluminous B star, GIDDINGS J.K.,	265
New observations of ultraviolet variability in Wolf-Rayet stars, BURTON W.M., EVANS R.G., PATCHETT BRUCE, WU CHI-CHAO	605

X-RAY ASTRONOMY	
Seyfert galaxies as X-ray sources, ELVIS MARTIN, MACCACARO TOMMASO, WILSON A.S., WARD M.J., PENSTON M.V., FOSBURY	
R.A.E., PEROLA G.C	129
X-ray source counts at high galactic latitude, WARWICK R.S., PYE J.P	160
The recurrent X-ray transient A 0538-66, WHITE N.E.,	109
CARPENTER G.G	
Variations of Circinus X-1 in the infrared, GLASS I.S	335
An optical candidate for 2A 0042+323 (= 3U 0042+32), CHARLES PHILIP, THORSTENSEN JOHN, BOWYER STUART	29P
The periodic behaviour of 2A 0042+323 (= 3U 0042+32),	
WATSON M.G., RICKETTS M.J	35P
The structure of the Virgo cluster X-ray source, DAVISON	200
P.J.NA search for X-ray emission from Abell clusters and	JJE
superclusters, RICKETTS M.J	51P
X-ray and optical observations of 3U 0900-40 (Vela X-1),	
CHARLES P.A., MASON K.O., WHITE N.E., CULHANE J.L., SANFORD P.W., MOFFAT A.F.J	813
Photometry and polarimetry of AM Herculis, BAILEY J.A.,	
JONES D.H.P. PARKES G.E. MASON K.O	73P

MONTHLY NOTICES: NOTICE TO AUTHORS

I GENERAL. All papers communicated for publication in *Monthly Notices* are submitted to the scrutiny of referees. There is no page charge for publication in *Monthly Notices*. The Society holds the copyright of all papers published in its Journals.

2 PREPARATION OF PAPERS. Authors are allowed considerable latitude, but they are requested to follow the general style of recent issues of *Monthly Notices*. They should

attend particularly to:

a the provision of a summary of not more than 200 words;

b the division of a paper into sections and, if necessary, sub-sections;

c the annotation of the typescript so as to give the printer all possible guidance in setting the paper, with special reference to ambiguous and unusual symbols, sub- and superscripts, and the placing of diagrams and tables.

d the provision of a title for each table and diagram.

Papers containing extensive tabular, diagrammatic or photographic material will normally be published on microfiche but an extended summary of up to 1000 words will appear in conventional form. The Editors may also recommend that parts of some papers are published on microfiche. Papers which may be suitable for microfiche should be discussed with the Editors at an early stage in their preparation. Guidance for the preparation of microfiche papers is contained in *Monthly Notices* Volume 181 No. 1.

Three copies of each paper should be submitted. One copy should be typewritten double-spaced on one side of the paper only, leaving a one-inch margin on the left-hand side. The other two copies should be in a weight-reduced form such as on flimsy paper, reduced to half size or copied on both sides of the page. The first page of the typescript should contain the full postal address of the author(s) to appear on the paper and the address

to which proofs are to be sent if that is different.

3 DIAGRAMS should be drawn in black ink on tracing material or smooth white board, with a line weight and lettering suitable for reduction to fit the type area of *Monthly Notices*. Drawings for reduction to 1/3, 1/2 or 7/10 of their original size, require line weight and lettering of the following thicknesses and sizes respectively:

ABC abc	ABC abc	ABC abc
1 7	1/2	710

Reductions are linear, and authors are reminded that the space between parts of a diagram as well as lines and lettering, are reduced. Adequate allowance should be made for this to avoid the joining up, during blockmaking, of parts which are close together. If a diagram has to be redrawn a standard charge will usually be made for this service (at present £5.50).

Two rough copies of diagrams should be provided for the use of the Editors and Referees.

4 PHOTOGRAPHS to be reproduced as half-tone plates are acceptable only it they are essential. Glossy unmounted prints should be submitted. Copies are required for the use of the Editors and Referees.

5 ABBREVIATIONS and references should preferably follow the practice set out in I.A.U. Trans. XII (c) or, if not available in that volume, the World List of Scientific Periodicals.

6 PROOFS. Authors are liable for the cost of alterations in excess of 50p per page. It is therefore in their own, as well as the Society's interest, to seek the maximum conciseness and simplification of symbols and equations consistent with clarity. Proofs should be returned within three days of receipt.

7. SHORT COMMUNICATIONS. These should merit urgent publication and should not, as a rule, exceed 1500 words. Such papers will normally be published between seven and ten weeks after acceptance. The Editors may themselves undertake responsibility for correcting proofs of such papers. Twenty-five offprints will be automatically supplied to the author(s) without charge; additional offprints may be obtained at prevailing rates, provided the order for extra copies is placed when the paper is submitted.

Papers in this category will be included as part of a routine issue of *Monthly Notices*, they will be printed on tinted paper and carry a special pagination which will enable them

to be bound up together at the end of each volume.

Monthly Notices

OF THE R.A.S. VOL. 183 NO. 3 JUNE 1978

CONTENTS

- 549 R. A. E. Fosbury, U. Mebold, W. M. Goss and M. A. Dopita: The active elliptical galaxy NGC 1052
- 569 J. F. Dean, P. R. Warren and A. W. J. Cousins: Reddenings of Cepheids using BVI photometry
- 585 Bernard J. T. Jones and Gary Steigman: Distortions of the cosmic radiation spectrum in baryon-symmetric cosmologies
- 595 Richard J. Rudy and James C. Kemp: A survey of nine beta Cepheid stars for magnetic fields
- 605 W. M. Burton, R. G. Evans, Bruce Patchett and Chi-Chao Wu: New observations of ultraviolet variability in Wolf-Rayet stars
- 617 Eric Graham and Daniel R. Moore: The onset of compressible convection
- 633 Galen R. Gisler: Clusters of galaxies and the statistics of emission-line galaxies
- 645 P. M. McCulloch, P. A. Hamilton, R. N. Manchester and J. G. Ables: Polarization characteristics of southern pulsars II. 640-MHz observations
- 677 C. A. Murray: On the precession and nutation of the Earth's axis of figure
- 687 M. M. Shara and G. Shaviv: Hydrodynamic simulations of white-dwarf-main-sequence star collisions
- 701 B. L. Morgan, D. R. Beddoes, R. J. Scaddan and J. C. Dainty: Observations of binary stars by speckle interferometry I.
- 711 F. F. Gardner and J. B. Whiteoak: Observations of the J=1-0 transition of CS at 49 GHz in southern molecular clouds
- 727 A. B. Evans: Correlation of Newtonian and relativistic cosmologies
- 749 G. C. McVittie: Newtonian cosmology with a time-varying constant of gravitation
- 765 J. Katz: On the number of unstable modes of an equilibrium
- 771 R. Buckley: Pulsar magnetospheres with parallel electric fields I
- 779 James Binney: Twisted and warped disks as consequences of heavy halos
- 799 R. X. McGee, Lynette M. Newton and P. W. Butler: Large Magellanic Cloud sources at 3.4-cm wavelength
- 805 L. T. Little, P. W. Riley, G. H. Macdonald and D. N. Matheson: Association of cyanodiacetylene emission in Heiles 2 with a cloud collision?
- 813 P. A. Charles, K. O. Mason, N. E. White, J. L. Culhane, P. W. Sanford and A. F. J. Moffat. X-ray and optical observations of 3U 0900-40 (Vela X-1)

Short Communications

- 73P J. A. Bailey, D. H. P. Jones, G. E. Parkes and K. O. Mason: Photometry and polarimetry of AM Herculis
- 79P Paul Murdin, David H. Clark and J. L. Culhane: Coronal lines in supernova remnant spectra
- 85P I. S. Glass: NGC 5506: an almost Seyfert galaxy
- 89P A. K. Pradhan: Fine-structure transitions by electron impact in singly-ionized sulphur
- 93P Paul T. P. Ho and Alan H. Barrett: First detection of a non-metastable ammonia line in absorption
- 97P A. J. Longmore, T. G. Hawarden, B. L. Webster, W. M. Goss and Ulrich Mebold: Two new dwarf galaxies in the Local Group: UKS 1927-177 and UKS 2323-326